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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,194	08/16/2001	Hideki Yamamoto	107314-00025	9215

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EXAMINER	
SHENG, TOM V	
ART UNIT	PAPER NUMBER
2673	

DATE MAILED: 07/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/930,194	YAMAMOTO, HIDEKI	
	Examiner	Art Unit	
	Tom V Sheng	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. Figures 1, 2, 3, 4, 7, 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: LIQUID CRYSTAL DISPLAY DEVICE WITH GAMMA CORRECTION.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Brownlow et al. (US Patent 6556162 B2).

As to claims 1 and 5, Brownlow teaches a liquid crystal projector (conventional gamma correction applied in active matrix liquid crystal display; column 1, lines 8-10) comprising an analog gamma correction circuit (figure 1; linear DAC 2), wherein

a gamma correction circuit (DAC 1) for changing gamma correction characteristics whose input-output characteristics are variable (receives m MSBs of a k bit parallel image input signal, 2m different reference voltages, and outputs two reference voltages V_L and V_H) is provided in a stage preceding the analog gamma correction circuit (DAC 2), and the input-output characteristics of the gamma correction circuit for changing gamma correction characteristics are changed so that gamma correction characteristics are changed (the second stage DAC 2 inputs the two reference voltages and the n LSBs and outputs gamma corrected analog output a liquid crystal display, which is illustrated as capacitive load C_{LOAD}). See column 1, lines 13-51.

5. Claims 9, 11, 13, and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamaguchi et al. (US 2003/0001810 A1).

As to claims 9 and 13, Yamaguchi teaches a liquid crystal projector (figure 1; liquid crystal display device) comprising a digital gamma correction circuit (gamma correction circuit 23), wherein

a gamma correction circuit (gamma correction data storing circuit 22) for changing gamma correction characteristics whose input-output characteristics are

variable (receives corrected pattern selecting data DP of 3 bits, and selects a pattern of data D_{RR}, D_{GR}, and D_{BR} based on the 3 address bits A12-A10) is provided in a stage preceding the digital gamma correction circuit (gamma correction circuit 23), and the input-output characteristics of the gamma correction circuit for changing gamma correction characteristics are changed so that gamma correction characteristics are changed (the gamma correction circuit 23 inputs the uncorrected video data bits D_R, D_G, D_B and the selected pattern and outputs gamma corrected digital data D_{RG1}, D_{GG1}, D_{BG1}). See page 8, paragraphs 84, 85, 86, 88, and page 10, paragraph 107.

As to claims 11 and 15, Yamaguchi's gamma correcting circuit 23 is a digital gamma correction circuit.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 2-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brownlow as applied to claim 1 or 5 above, and further in view of Gormish (US Patent 5910796) and Peter Shirley (Fundamentals of Computer Graphics published by A K Peters, Ltd, ISBN 1-56881-124-1).

As to claims 2 and 6, Brownlow teaches the selection of reference voltages VL and VH based on the m MSBs; however, Brownlow does not teach how it is done.

Gormish teaches detection of the gamma of a display and display is corrected according to the interactively detected gamma. In particular, after the gamma of a basic color is determined, the input voltage for a given pixel is corrected based on an exponential equation (2), which is a general gamma correction equation based on 8 bits of value per pixel color (Fundamentals of Computer Graphics by Peter Shirley, page 52). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to incorporate Gormish's exponential equation in Brownlow's DAC 1 since this is a common implementation of gamma correction.

As to claims 3-4 and 7-8, Brownlow's DAC 1 is an analog gamma correction circuit and not digital. However, this is not patentively distinct since both can be implemented by one of ordinary skill in the art and the choice is simply where the first gamma correction stage is positioned before a digital-to-analog conversion or inside/after the conversion.

8. Claims 10, 12, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi as applied to claim 9 or 13 above, and further in view of Gormish (US Patent 5910796) and Peter Shirley (Fundamentals of Computer Graphics published by A K Peters, Ltd, ISBN 1-56881-124-1).

As to claims 10 and 14, Yamaguchi teaches the construction of corrected output data pattern based on linear equations (equation number 101-110) selection, and this is not an exponential equation. On the other hand, Gormish teaches detection of the gamma of a display and display is corrected according to the interactively detected

gamma. In particular, after the gamma of a basic color is determined, the input voltage for a given pixel is corrected based on an exponential equation (2), which is a general gamma correction equation based on 8 bits of value per pixel color (Fundamentals of Computer Graphics by Peter Shirley, page 52). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to incorporate Gormish's exponential equation in Yamaguchi's gamma correction data storing circuit 22 for pattern construction since this would be a more straightforward way of calculating the correction data.

As to claims 12 and 16, Yamaguchi's gamma correcting circuit 23 is a digital gamma correction circuit.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V Sheng whose telephone number is (703)305-6708. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703)305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

TS
June 24, 2003

KENT CHANG
PRIMARY EXAMINER